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2nd International Conference on
Numerical Grid Generation in Computational
Fluid Dynamics

Miami Beach, December 5-9, 1988

Final Report

Submitted to

Air Force Office of Scientific Research,
Washington D.C.

and

National Aeronautics and Space Administration,
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by

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1. INTRODUCTION

The International Conference series on Numerical Grid Generation in Computational Fluid Dynamics was started in July 1986 to recognize grid generation as an essential subject of Computational Fluid Dynamics ~~(CFD)~~ which needs individual attention. The conference is held bi-annually with the purpose of disseminating new ideas, recent advances and difficulties encountered by researchers around the world while solving practical Computational Fluid Dynamics problems. The second conference in the series was held in Miami, Florida, USA, during the week of December 5-9, 1988. The main theme of the conference was 2-D and 3-D adaptive grid methods. Nevertheless, papers were invited from all relevant conventional areas such as algebraic, boundary fit, and conformal mapping methods and other areas including applications in computational mechanics. (KR) ←

2. ORGANIZATION

The Mechanical Engineering Department at the University of Miami with the help from National Aeronautics & Space Administration (NASA) and Air Force Office of Scientific Research (AFOSR) organized the conference. Dr. Subrata Sengupta was the Chairman of the organizing committee. Dr. Wilson of AFOSR and Dr. Randolph Graves of NASA Head Quarters were the prime movers in arranging support for the meeting. Members of the papers review committee

were Drs. Peter R. Eiseman of Columbia University, NY., Joe F. Thompson of Mississippi State University, MS., and Jochem Hauser of European Space Agency, Netherlands. The conference advisory panel consisted of Dr. Dale R. Satran of NASA Headquarters, Mr. David Nelson of AFOSR., Prof. Cedric Taylor of University College of Swansea, U.K., Dr. Leslie J. Chow of NASA, Ames Research Center and Dr. W. Schmidt of Dornier GmbH, FRG.

3. PROGRAM

3.1 Keynote Lectures :

The program for the conference was highlited by five keynote speakers. They were :

1. "Current Status in CFD"

- Dr. Paul Kutler, NASA Ames Research Center, CA., USA

2. "Applications of Grid Generation in Air Force"

- Dr. Larry Lijieweski, USAFB, Eglin, FL., USA

3. "Parallel Mesh Generation"

- Dr. Gentzsch, University of Landshut, FRG.

4. "Parallel Computing"

- Lt. Col. Oliver, USAF Weapons Laboratory, USA.

3.2 List of Presentation Sessions :

In all 38 paper presentation sessions were held. They are as follows :

1. General Session
2. Application of Grids
3. Element Based Methods
4. Geometric Modelling
5. Surface Grid Generation
6. Algebraic Methods I
7. Algebraic Methods II
8. Algebraic Methods III
9. Elliptic and Hyperbolic Methods
10. Zonal Methods
11. Orthogonal Methods
12. Conformal and Orthogonal Mapping Methods
13. Interactive Multi-block Methods
14. 3D Multi-block Adaptive Methods
15. Multi-block and Multi-grid Methods
16. Adaptive Methods
17. Adaptive Grid Generation I
18. Adaptive Grid Generation II
19. Adaptive Grid Generation III

- 20. Unstructured Grid Generation
- 21. Unstructured Grid Generation I
- 22. Unstructured Grid Generation II
- 23. Unstructured Grid Generation III

Applications

- 24. Adaptive Applications
- 25. Grid over Aircraft - Multi-block Methods I
- 26. Grid over Aircraft - Multi-block Methods II
- 27. 3D and Surface Grids
- 28. Unstructured Grid Adaptation - Delaunay Triangulation
- 29. Unstructured Grid Adaptation - Other Techniques
- 30. Variational Adaptive Methods
- 31. Heat Transfer
- 32. Computational Hydraulics I
- 33. Computational Hydraulics II
- 34. Navier-Stokes Equations I
- 35. Navier-Stokes Equations II
- 36. Turbo Machinery I
- 37. Turbo Machinery II
- 38. Miscellaneous

3.3 Special Sessions

The program also included a special invited lecture on the use of the parallel computer manufactured by Thinking Machines, Inc., for CFD applications on Monday, December 5, 1988. The lecture was given by a representative of United Technologies Research Center, CT. Conference banquet was held on Tuesday, December 6, 1988. Dr. Randolph Graves of NASA Head Quarters delivered the banquet speech.

3.4 Computer Vendor Displays

A demonstration of the current computer hardware advances in the form of a Computer Show on Wednesday, December 7, 1988. The manufactures included Silicon Graphics, Mountain View, CA., Convex Computer Corporation., Dallas, TX., Stellar Computers, Boston, MA., and Sun Microsystems Inc., FL. Computers displayed include the new Personal IRIS and Sun 4/260 workstations. A video illustrating the capabilities of Convex C-1 supercomputer was also shown.

4. PROCEEDINGS

The proceedings of the conference was published in the form of reference text and was made available to all participants. It was published by Pineridge Press, Swansea, U.K. and was titled " Numerical Grid Generation in Computational Fluid Mechanics ". The papers were grouped according to basic methods and applications in the text. The table of contents of the proceedings is attached to this report as Appendix 3. The volume consisted of 1069 printed pages of text and diagrams.

5. ATTENDEES

The total number of attendees were 186. The number of delegates participating from outside United States were 54. Foreign participants belonged to one of the following countries : UK, FRG, France, Italy, Netherlands, Denmark, Finland, India, China, Israel, Brazil, Canada, Norway, Sweden, Austria, Switzerland, Japan and USSR. The list of attendees is attached to this report as Appendix 2.

6. FUTURE PLANS

The overwhelming response for the second conference prompted the organizing committee to plan to continue the conference series. The 3rd International Conference has been planned to be held at Barcelona, Spain in 1991.

APPENDIX 1

Conference Program Brochure

APPENDIX 2

List of Attendees

THE 2ND INTERNATIONAL CONFERENCE ON
NUMERICAL GRID GENERATION IN COMPUTATIONAL FLUID DYNAMICS
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